

Dare County
Closed East Lake Landfill
Facility Permit No. 28-02
Semi-Annual Sampling Report
(February 2016 Sampling Event)



**CDM
Smith**

DENR USE ONLY:

Paper Report

Electronic Data - Email CD (data loaded: Yes / No)

Doc/Event #:

NC DENR

Division of Waste Management - Solid Waste

**Environmental Monitoring
Reporting Form**

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Consultant - CDM Smith Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Mathew F. Colone Phone: 919-325-3569

E-mail: colonemf@cdmsmith.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Dare County Closed East Lake Landfill	U.S. Highway 64 East Lake, NC 27953	28-02	.0500	February 18, 2016

Environmental Status: (Check all that apply)

Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

Groundwater monitoring data from monitoring wells
 Groundwater monitoring data from private water supply wells
 Leachate monitoring data
 Surface water monitoring data

Methane gas monitoring data
 Corrective action data (specify) _____
 Other(specify) _____

Notification attached?

- No. No groundwater or surface water standards were exceeded.
- Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
- Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Mathew F. Colone

Consultant

(919) 325-3569

Facility Representative Name (Print)



Signature

Title

(Area Code) Telephone Number

4/27/2016

Affix NC Licensed Professional Geologist Seal

Date

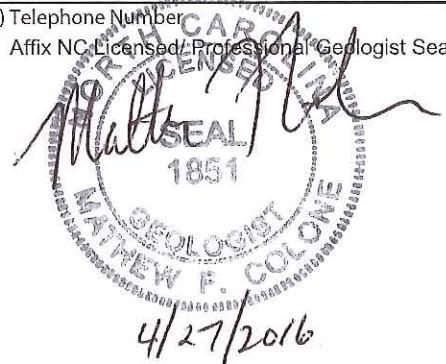
5400 Glenwood Ave, Suite 400, Raleigh, NC 27612

Facility Representative Address

F-0412

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009



5400 Glenwood Avenue, Suite 400
Raleigh, North Carolina 27612
tel: 919 325-3500
fax: 919 781-5730

April 27, 2016

Ms. Jaclynne Drummond
North Carolina Department of
Environmental Quality
Division of Waste Management
Solid Waste Section
2090 U.S. 70 Highway
Swannanoa, North Carolina 28778

Subject: February 2016 Semi-Annual Groundwater Sampling Report
Closed East Lake Landfill, Dare County, North Carolina
Facility Permit No. 28-02

Dear Ms. Drummond:

CDM Smith Inc. (CDM Smith), on behalf of Dare County, is submitting an electronic copy of the February 2016 semi-annual sampling event report. This letter report presents the results of the most recent semi-annual sampling event that was completed at the Closed East Lake Landfill and constitutes the first semi-annual sampling event for 2016. The groundwater monitoring network consists of 10 wells (i.e. Well #1s, -1d, -2s, -2d, -3s, -3d, -4s, -4d, -5s, and -5d) and a downstream surface water sample location. Additional samples were collected from Well #6s, -6d, and -7s during the February 2016 sampling event to monitor the horizontal and vertical extent of benzene in groundwater. Field activities and sampling results for all wells and the surface water sample are discussed below.

Field Activities

Groundwater and surface water samples from the Closed East Lake Landfill were collected on February 18, 2016, by Environment One, Inc. (Environment One). Monitoring wells and the surface water sample location are shown on **Figure 1**. Well construction details for the monitoring wells are summarized in **Table 1**.

Groundwater elevations were measured at each well prior to sampling using an electronic water level indicator with an accuracy of 0.01 feet. These groundwater elevations as presented in **Table 2** were used to construct a potentiometric surface map for this sampling event. The potentiometric contours are presented on Figure 1.

Each monitoring well was measured for pH, conductivity, temperature, turbidity, dissolved oxygen, and oxidation-reduction potential (ORP) prior to sampling. The same water quality parameters were



Ms. Jaclynne Drummond

April 27, 2016

Page 2

measured at the surface water sample location with the exception of ORP. The water quality parameters at the time samples were collected are presented in **Table 3**.

Sampling Results

Environment One located in Greenville, North Carolina, analyzed the groundwater and surface water samples for North Carolina Appendix I volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B, metals by EPA Method 200.8, and chloride and sulfate by Standard Method (SM) 4500. Additional samples were collected from the shallow monitoring wells and analyzed for total suspended solids by SM 2540D. In accordance with Solid Waste Section guidelines, the analytical results were reported to the laboratory specific method detection limit (MDL) and are quantifiable at or below Solid Waste Section Limits (SWSLs). All monitoring wells and the surface water location for the Closed East Lake Landfill had detections of analytes above the MDL but below SWSLs. These detections were qualified with "J" flags, which indicate an estimated concentration.

The following list presents the analytes detected above the MDL at each sample location. No "J" flag detections are provided. Underlined analytes exceeded the 15A NCAC 02L .0202 (NC 2L) Groundwater Quality Standard, Groundwater Protection Standard, or the 15A NCAC 02B Surface Water Quality Standard for Class C Waters. A complete summary of all detected and estimated concentrations for the February 2016 and previous sampling events is presented in **Table 4**. The historical data is not continuous but data for select years is provided. The laboratory analytical data report is provided in **Appendix A**.

Well #1s

Inorganics: Chloride, Sulfate

Metals: None Detected

Volatile Organic Compounds: None Detected

Well #1d

Inorganics: Chloride

Metals: Copper, Zinc

Volatile Organic Compounds: None Detected

Well #2s

Inorganics: Chloride

Metals: Arsenic, Barium, Zinc

Volatile Organic Compounds: Chlorobenzene, 1,4-Dichlorobenzene

Ms. Jaclynne Drummond

April 27, 2016

Page 3

Well #2d

Inorganics: Chloride
Metals: Chromium, Copper, Zinc
Volatile Organic Compounds: None Detected

Well #3s

Inorganics: Chloride
Metals: Barium, Zinc
Volatile Organic Compounds: None Detected

Well #3d

Inorganics: Chloride
Metals: Copper, Lead, Zinc
Volatile Organic Compounds: None Detected

Well #4s

Inorganics: Chloride
Metals: Barium, Zinc
Volatile Organic Compounds: None Detected

Well #4d

Inorganics: Chloride
Metals: Copper, Lead, Zinc
Volatile Organic Compounds: None Detected

Well #5s

Inorganics: Chloride
Metals: Arsenic, Barium, Copper, Zinc
Volatile Organic Compounds: None Detected

Well #5d

Inorganics: Chloride
Metals: Copper, Zinc
Volatile Organic Compounds: None Detected

Well #6s

Inorganics: Chloride
Metals: Arsenic, Barium
Volatile Organic Compounds: Benzene, Chlorobenzene, 1,4-Dichlorobenzene

Ms. Jaclynne Drummond

April 27, 2016

Page 4

Well #6d

Inorganics:	<u>Chloride</u>
Metals:	None Detected
Volatile Organic Compounds:	None Detected

Well #7s

Inorganics:	<u>Chloride, Sulfate</u>
Metals:	Barium
Volatile Organic Compounds:	None Detected

Downstream

Inorganics:	Chloride
Metals:	None Detected
Volatile Organic Compounds:	None Detected

"J" flags were not included in the previous list, but several locations had "J" flag detections that exceeded the standards. The "J" flag constituents above the standards along with their locations are listed below.

Cobalt:	Well #2s, -4s, and -5s
Vanadium:	Well #1s, -1d, -2s, -2d, -3s, -3d, -4s, -4d, -5s, -5d, -6s, -6d, and -7s

No VOCs were detected in the trip blank. The equipment blank had estimated detections of antimony, nickel, vanadium, and chloroethane below their respective NC 2L Standard. Acetone was also detected in the equipment blank and is a common laboratory contaminant. A duplicate sample was collected from Well# 6d and had analytes detected at concentrations similar to the parent sample.

VOCs detected in samples collected from Well #2s during the February 2016 sampling event were below the NC 2L Standards. Benzene was detected slightly above the NC 2L Standard in Well #2s from August 2007 (2.50 parts per billion (ppb)) to August 2013 (1.10 ppb). Benzene has not been detected above the NC 2L Standard in Well #2s since the February 2014 sampling event. Carbon disulfide, chlorobenzene, and 1,4-dichlorobenzene have also been detected in Well #2s with a majority of the detections below the NC 2L Standards. VOC concentrations at Well #2s show a decreasing trend based on the analytical data.

Benzene was detected slightly above the NC 2L Standard at 1.20 ppb in samples collected from Well #6s during the February 2016 sampling event. Chlorobenzene and 1,4-dichlorobenzene were also detected in Well #6s below their respective NC 2L Standard. These analytes have never been detected above their respective NC 2L Standard. The historical VOC detections in Well #2s and Well #6s may



Ms. Jaclynne Drummond

April 27, 2016

Page 5

result from an offsite source based on the direction of groundwater flow across the landfill (See Figure 1). CDM Smith will monitor future analytical results to evaluate VOC trends.

The semi-annual groundwater monitoring program will be continued by Dare County. The second semi-annual sampling event for 2016 is tentatively scheduled for August. If you have any questions or require further explanation, please do not hesitate to call me at (919) 325-3500.

Very truly yours,

A handwritten signature in blue ink that reads "Mathew F. Colone".

Mathew F. Colone, P.G.

CDM Smith Inc.

cc: Edward Mann, Dare County

Table 1
Monitoring Well Construction Summary
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Completion Date	Drilling Method	Northing	Easting	Aquifer Monitoring Interval	Total Depth (feet bgs)	Depth (feet bgs)			Monitoring Well Diameter (inches)
								Screen Interval	Filter Interval	Seal Interval	
28-02	Well #1s	4-Dec-91	Mud Rotary	786,899.90	2,924,947.09	Surficial	16.0	6.0-16.0	4.5-16.0	2.5-4.5	2.0
28-02	Wells #1d	4-Dec-91	Mud Rotary	786,894.30	2,924,945.12	Surficial	54.0	44.0-54.0	35.5-54.0	33.5-35.5	2.0
28-02	Wells #2s	5-Dec-91	Mud Rotary	786,542.89	2,924,342.14	Surficial	12.5	2.5-12.5	2.5-12.5	1.5-2.5	2.0
28-02	Wells #2d	5-Dec-91	Mud Rotary	786,544.47	2,924,335.26	Surficial	46.5	36.5-46.5	33.5-46.5	31.5-33.5	2.0
28-02	Wells #3s	11-Dec-91	Mud Rotary	787,095.35	2,923,655.58	Surficial	13.0	3.0-13.0	2.0-13.0	0-2.0	2.0
28-02	Wells #3d	11-Dec-91	Mud Rotary	787,105.88	2,923,654.23	Surficial	47.0	37.0-47.0	34.5-47.0	32.0-34.5	2.0
28-02	Wells #4s	12-Dec-91	Mud Rotary	787,373.17	2,924,609.72	Surficial	15.0	5.0-15.0	3.0-15.0	1.0-3.0	2.0
28-02	Wells #4d	12-Dec-91	Mud Rotary	787,377.81	2,924,606.30	Surficial	51.0	41.0-51.0	37.0-51.0	35.5-37.0	2.0
28-02	Wells #5s	13-Dec-91	Mud Rotary	787,566.68	2,923,976.73	Surficial	18.0	8.0-18.0	6.0-18.0	4.0-6.0	2.0
28-02	Wells #5d	13-Dec-91	Mud Rotary	787,567.14	2,923,985.49	Surficial	58.0	48.0-58.0	46.0-58.0	44.5-46.0	2.0
28-02	Wells #6s	9-Jan-96	Mud Rotary	786,605.38	2,924,055.50	Surficial	17.0	7.0-17.0	5.0-17.0	3.0-5.0	2.0
28-02	Wells #6d	9-Jan-96	Mud Rotary	786,605.40	2,924,047.91	Surficial	48.0	38.0-48.0	36.0-48.0	34.0-36.0	2.0
28-02	Wells #7s	10-Jan-96	Mud Rotary	786,455.09	2,924,691.47	Surficial	18.0	8.0-18.0	6.0-18.0	4.0-6.0	2.0

Notes:

1. bgs - below ground surface
2. msl - mean sea level
3. Horizontal Control - North American Datum 1983 State Plane Feet North Carolina

Table 2
Groundwater Elevations
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Date Measured	2/14/2012		8/16/2012		2/5/2013		8/20/2013		2/26/2014	
		Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)
28-02	Well #1s	7.07	6.54	0.53	6.24	0.83	6.01	1.06	6.04	1.03	6.40	0.67
28-02	Well #1d	7.15	6.40	0.75	6.36	0.79	6.21	0.94	6.24	0.91	6.39	0.76
28-02	Well #2s	5.80	5.05	0.75	5.35	0.45	4.63	1.17	5.02	0.78	4.74	1.06
28-02	Well #2d	5.49	4.66	0.83	4.67	0.82	4.62	0.87	4.70	0.79	4.66	0.83
28-02	Well #3s	4.28	3.76	0.52	3.88	0.40	3.81	0.47	3.55	0.73	4.32	-0.04
28-02	Well #3d	3.85	3.18	0.67	3.25	0.60	3.00	0.85	3.04	0.81	3.11	0.74
28-02	Well #4s	4.20	5.25	-1.05	5.04	-0.84	3.00	1.20	5.15	-0.95	5.04	-0.84
28-02	Well #4d	4.22	3.55	0.67	3.55	0.67	3.37	0.85	3.42	0.80	3.54	0.68
28-02	Well #5s	9.88	8.73	1.15	8.75	1.13	8.72	1.16	9.02	0.86	8.86	1.02
28-02	Well #5d	10.33	9.60	0.73	9.63	0.70	9.41	0.92	9.68	0.65	9.54	0.79
28-02	Well #6s	7.38	5.87	1.51	Not Measured		5.75	1.63	5.90	1.48	5.70	1.68
28-02	Well #6d	6.88	6.51	0.37	Not Measured		6.43	0.45	6.50	0.38	6.50	0.38
28-02	Well #7s	5.08	3.98	1.10	3.98	1.10	4.00	1.08	3.85	1.23	3.80	1.28

Notes:

1. AMSL - Above Mean Sea Level
2. btoc - Below Top of Casing
3. Vertical Control - North American Vertical Datum of 1988
4. Horizontal Control - North American Datum of 1983
5. Well #6s and #6d were inaccessible during the August 2012 sampling event.

Table 2
Groundwater Elevations
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Date Measured	8/19/2014		2/19/2015		8/5/2015		2/18/2016	
		Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet AMSL)
28-02	Well #1s	7.07	5.94	1.13	6.14	0.93	6.46	0.61	5.73	1.34
28-02	Well #1d	7.15	6.18	0.97	6.23	0.92	6.64	0.51	6.22	0.93
28-02	Well #2s	5.80	4.93	0.87	4.91	0.89	5.88	-0.08	5.23	0.57
28-02	Well #2d	5.49	4.52	0.97	4.70	0.79	5.27	0.22	4.73	0.76
28-02	Well #3s	4.28	3.50	0.78	3.80	0.48	4.69	-0.41	4.15	0.13
28-02	Well #3d	3.85	3.00	0.85	3.14	0.71	4.00	-0.15	3.28	0.57
28-02	Well #4s	4.20	4.45	-0.25	4.62	-0.42	4.39	-0.19	4.87	-0.67
28-02	Well #4d	4.22	3.21	1.01	3.30	0.92	3.81	0.41	3.36	0.86
28-02	Well #5s	9.88	8.81	1.07	8.75	1.13	9.40	0.48	8.88	1.00
28-02	Well #5d	10.33	9.55	0.78	9.36	0.97	10.00	0.33	9.35	0.98
28-02	Well #6s	7.38	5.76	1.62	5.48	1.90	6.64	0.74	5.56	1.82
28-02	Well #6d	6.88	6.41	0.47	6.51	0.37	7.20	-0.32	6.38	0.50
28-02	Well #7s	5.08	3.90	1.18	3.80	1.28	6.51	-1.43	3.65	1.43

Notes:

1. AMSL - Above Mean Sea Level
2. btoc - Below Top of Casing
3. Vertical Control - North American Vertical Datum of 1988
4. Horizontal Control - North American Datum of 1983
5. Well #6s and #6d were inaccessible during the August 2012 sampling event.

Table 3
Water Quality Measurements
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date:		8/15/2011			2/14/2012			8/16/2012			
		pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	TSS (mg/L)	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	TSS (mg/L)	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	TSS (mg/L)
28-02	Well #1s	6.7	1,381	19	38	6.8	1,535	17	85	6.7	1,259	19	50
28-02	Well #1d	7.1	957	19	NA	7.1	1,005	18	NA	7.1	917	18	NA
28-02	Well #2s	6.4	1,300	22	51	6.5	1,700	18	134	6.4	1,306	21	55
28-02	Well #2d	6.7	1,407	21	NA	7.2	1,869	19	NA	6.8	1,383	20	NA
28-02	Well #3s	6.1	3,058	24	11	6.5	2,110	15	40	6.4	1,503	20	31
28-02	Well #3d	6.9	926	20	NA	7.2	1,004	17	NA	7.0	995	18	NA
28-02	Well #4s	6.8	1,125	22	141	6.9	1,355	15	328	6.8	1,131	20	137
28-02	Well #4d	6.9	857	20	NA	7.1	1,000	18	NA	6.9	881	19	NA
28-02	Well #5s	6.4	1,524	21	58	6.4	1,988	18	135	6.4	1,526	20	68
28-02	Well #5d	7.1	766	21	NA	7.2	860	18	NA	7.1	768	20	NA
28-02	Well #6s	NA	NA	NA	NA	6.6	1,577	18	48	NA	NA	NA	NA
28-02	Well #6d	NA	NA	NA	NA	7.0	1,644	19	NA	NA	NA	NA	NA
28-02	Well #7s	NA	NA	NA	NA	6.3	4,420	18	22	6.2	1,887	20	9.5
Surface Water Sample Location													
28-02	Downstream	6.4	6,040	29	NA	6.6	5,190	7	NA	6.6	1,709	24	NA

Notes:

1. mg/L - milligrams per liter
2. uS/cm- Microsiemens per centimeter
3. TSS - Total Suspended Solids
4. S.U. - Standard Units
5. NA - Not Analyzed
6. Well #6s and #6d were inaccessible during the August 2012 sampling event.

Table 3
Water Quality Measurements
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Sample Date:	2/5/2013					8/20/2013					
		Monitoring Well Code	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	TSS (mg/L)	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)
28-02	Well #1s	6.9	1,382	15	<1	6.6	1,693	19	0.60	-108.2	42	63
28-02	Well #1d	7.5	930	17	NA	6.6	987	17	1.53	86.6	5	NA
28-02	Well #2s	6.6	1,415	16	27	6.6	1,861	21	0.47	-86.5	48	83
28-02	Well #2d	6.9	1,532	18	NA	6.9	2,012	21	1.47	137	10	NA
28-02	Well #3s	7.6	995	16	18	6.7	1,966	22	1.85	-49.9	8	9
28-02	Well #3d	6.6	1,535	18	NA	7.4	1,181	22	4.02	125.6	12	NA
28-02	Well #4s	7.0	1,278	14	72	6.5	1,414	20	0.39	-61.3	106	110
28-02	Well #4d	7.3	969	16	NA	6.9	984	20	0.61	-65.2	9	NA
28-02	Well #5s	6.5	1,598	17	51	6.6	1,525	21	0.60	-36.5	54	76
28-02	Well #5d	7.7	794	17	NA	7.4	846	20	3.16	158.9	3	NA
28-02	Well #6s	6.8	1,395	16	46	7.2	1,654	20	0.45	-97.2	0	34
28-02	Well #6d	7.4	1,338	17	NA	7.2	1,696	21	5.45	144.5	0	NA
28-02	Well #7s	6.5	2,700	17	9.3	6.5	1,867	21	1.01	54	6	2.9
Surface Water Sample Location												
28-02	Downstream	6.5	3,790	7	NA	6.7	2,424	24	1.48	--	6.20	NA

Notes:

- 1. mg/L - milligrams per liter
- 2. uS/cm- Microsiemens per centimeter
- 3. TSS - Total Suspended Solids
- 4. S.U. - Standard Units
- 5. ORP - Oxidation-Reduction Potential
- 6. NTUs - Nephelometric Turbidity Units
- 7. mV - Millivolts
- 8. NA - Not Analyzed

Table 3
Water Quality Measurements
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	2/26/2014							8/19/2014						
		pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)	TSS (mg/L)	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)	TSS (mg/L)
28-02	Well #1s	6.8	2,013	13	0.58	--	27	52	6.8	1,435	21	0.73	-90	48	87
28-02	Well #1d	7.4	952	14	2.82	--	11	NA	7.4	954	20	0.79	48	14	NA
28-02	Well #2s	6.7	1,899	12	0.73	--	92	77	6.5	1,617	25	1.68	-80	25	71
28-02	Well #2d	7.3	2,023	15	4.88	--	24	NA	6.8	1,775	23	1.68	16	23	NA
28-02	Well #3s	6.5	1,833	10	0.76	--	49	36	6.4	1,695	25	0.53	-51	19	34
28-02	Well #3d	7.4	1,102	12	4.53	--	22	NA	7.0	1,075	24	3.55	-13	46	NA
28-02	Well #4s	6.9	1,575	13	0.50	--	25	181	6.9	1,540	21	0.95	-75	110	96
28-02	Well #4d	7.3	987	13	0.54	--	37	NA	6.9	985	19	1.24	-42	15	NA
28-02	Well #5s	6.5	2,190	13	0.54	--	86	108	6.4	1,085	21	0.80	-61	80	135
28-02	Well #5d	7.4	850	16	2.49	--	8	NA	7.2	792	21	2.04	16	16	NA
28-02	Well #6s	6.8	1,760	13	0.62	--	80	74	6.6	1,452	25	0.64	-96	11	47
28-02	Well #6d	7.4	1,472	13	6.16	--	1	NA	6.9	1,546	25	3.97	5	9	NA
28-02	Well #7s	6.5	4,692	11	0.54	--	19	18	6.4	1,842	27	0.61	-26	12	7
Surface Water Sample Location															
28-02	Downstream	7.1	2,220	7	5.88	--	14.4	NA	6.7	536	30	3.52	--	13	NA

Notes:

- 1. mg/L - milligrams per liter
- 2. uS/cm- Microsiemens per centimeter
- 3. TSS - Total Suspended Solids
- 4. S.U. - Standard Units
- 5. ORP - Oxidation-Reduction Potential
- 6. NTUs - Nephelometric Turbidity Units

7. mV - Millivolts

8. NA - Not Analyzed

9. ORP was measured inaccurately during the February 2014 sampling event because of a malfunctioning probe.

Table 3
Water Quality Measurements
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Sample Date:		2/19/2015							8/5/2015						
Facility Permit Number	Monitoring Well Code	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)	TSS (mg/L)	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)	TSS (mg/L)
28-02	Well #1s	6.9	1,908	4	0.61	53	411	94	6.8	1,284	22	4.60	-107	5.13	68
28-02	Well #1d	7.7	931	3	4.25	103	4	NA	7.4	870	22	6.01	5	4.35	NA
28-02	Well #2s	6.9	1,600	6	0.74	29	42	79	6.4	1,203	27	4.30	-72	36.5	94
28-02	Well #2d	7.4	1,980	6	5.10	66	15	NA	6.8	1,210	26	4.93	-7	17.0	NA
28-02	Well #3s	6.7	2,700	3	0.67	45	41	70	6.5	974	29	3.63	-47	14.0	13
28-02	Well #3d	7.6	1,119	8	4.70	61	25	NA	7.0	886	28	4.47	-20	45.8	NA
28-02	Well #4s	7.7	1,676	6	0.73	133	238	148	7.0	1,341	24	6.44	-73	71.4	77
28-02	Well #4d	7.3	1,012	6	0.73	102	64	NA	7.0	958	23	6.35	-44	18.8	NA
28-02	Well #5s	6.7	2,730	9	0.44	35	71	127	6.5	1,405	23	6.54	-70	35.3	92
28-02	Well #5d	7.4	856	7	0.48	75	7	NA	7.1	740	23	3.81	-71	7.66	NA
28-02	Well #6s	7.0	1,512	5	0.50	41	2	60	6.7	978	29	4.67	-107	1.98	43
28-02	Well #6d	7.4	1,673	6	6.62	35	0	NA	6.9	1,027	29	4.73	-43	1.01	NA
28-02	Well #7s	6.9	5,010	7	0.98	75	40	17	6.5	1,760	29	4.99	-10	1.30	12
Surface Water Sample Location															
28-02	Downstream	7.5	1,308	3	10.37	--	5	NA	6.6	1,524	34	2.97	--	8.37	NA

Notes:

- 1. mg/l - milligrams per liter
- 2. uS/cm- Microsiemens per centimeter
- 3. TSS - Total Suspended Solids
- 4. S.U. - Standard Units
- 5. ORP - Oxidation-Reduction Potential
- 6. NTUs - Nephelometric Turbidity Units

- 7. mV - Millivolts
- 8. NA - Not Analyzed

Table 3
Water Quality Measurements
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Sample Date: 2/18/2016							
	Monitoring Well Code	pH (S.U.)	Conductivity (uS/cm)	Temperature (degrees Celsius)	Dissolved Oxygen (mg/l)	ORP (mV)	Turbidity (NTUs)	TSS (mg/L)
28-02	Well #1s	6.9	1,734	13	0.96	11	5	28
28-02	Well #1d	7.8	923	13	6.12	-11	9	NA
28-02	Well #2s	6.9	1,404	13	1.14	-19	32	116
28-02	Well #2d	7.3	1,645	13	4.84	37	12	NA
28-02	Well #3s	6.6	1,683	14	2.24	13	95	96
28-02	Well #3d	7.6	1,038	10	5.34	-49	25	NA
28-02	Well #4s	7.0	1,394	14	0.60	-12	96	92
28-02	Well #4d	7.3	963	14	0.82	-19	13	NA
28-02	Well #5s	6.6	1,647	10	2.78	60	89	137
28-02	Well #5d	7.4	856	14	1.62	99	6	NA
28-02	Well #6s	6.9	1,135	15	0.76	-34	4	57
28-02	Well #6d	7.3	1,320	14	4.05	16	7	NA
28-02	Well #7s	6.7	3,320	14	2.20	-5	6	13
Surface Water Sample Location								
28-02	Downstream	6.9	932	8	6.68	--	2	NA

Notes:

- 1. mg/L - milligrams per liter
- 2. uS/cm- Microsiemens per centimeter
- 3. TSS - Total Suspended Solids
- 4. S.U. - Standard Units
- 5. ORP - Oxidation-Reduction Potential
- 6. NTUs - Nephelometric Turbidity Units
- 7. mV - Millivolts
- 8. NA - Not Analyzed

Table 4a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds								General Chemistry						
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #1s	15-Feb-90																										510	55			
28-02	Well #1s	2-Feb-95		75																								189	275			
28-02	Well #1s	12-Jan-96		65																								17	606			
28-02	Well #1s	20-Aug-01		46																								9.5	261.4			
28-02	Well #1s	12-Sep-02		43																								8	93.5			
28-02	Well #1s	26-Mar-03		41																								6	213			
28-02	Well #1s	2-Sep-04		46																								17	188			
28-02	Well #1s	19-Feb-07		25																												
28-02	Well #1s	20-Aug-07		73																												
28-02	Well #1s	25-Feb-08		28																												
28-02	Well #1s	15-Aug-11	43	66.7J		0.18J	0.22J	0.76J	1.7J		0.18J			6.4J	1.5J		0.03J	2.8J	8.7J									130	96.9J			
28-02	Well #1s	14-Feb-12	0.21J	51	68.2J	0.06J	0.29J	1.1J	0.9J	79	1.5J			8.5J	1.2J	6.9J	0.03J	2.6J	37									109	109J			
28-02	Well #1s	16-Aug-12		51	69.4J		0.10J	0.49J	0.62J	15	0.34J			5.0J	1.7J			1.2J	16									108	99.4J			
28-02	Well #1s	5-Feb-13		21	56.4J		0.04J	0.56J	0.47J	1.5J	0.16J			3.8J	1.8J			1.4J	3.1J									117	188J			
28-02	Well #1s	20-Aug-13		52	78.4J	0.03J	0.09J	0.25J	0.60J	5.1J				5.8J	2.2J	1.1J		1.6J	4.7J									145	224J			
28-02	Well #1s	26-Feb-14	0.05J	30	79.6J	0.07J	0.50J	0.49J	1.4J		0.10J			4.3J	1.4J	0.18J		1.6J	3.2J									109	355			
28-02	Well #1s	19-Aug-14		31	76.6J	0.09J	0.13J	0.66J	0.69J	9.3J				5.8J	1.4J	1.0J		2.1J	9.6J									106	111J			
28-02	Well #1s	19-Feb-15	0.19J	27	97.3J	0.05J	0.47J	0.72J	4.0J		0.22J			6.5J	3.2J	0.09J		2.4J	4.1J									134	247J			
28-02	Well #1s	5-Aug-15	0.43J	40	74.7J	0.06J	0.04J	0.85J	0.76J	9.7J				5.4J	2.1J	3.3J		1.2J	15									117	157J			
28-02	Well #1s	18-Feb-16	0.46J	6.6J	85.9J	0.07J	0.11J		0.73J	4.0J	0.56J			9.9J	1.5J	0.44J		2.4J	6.7J									69	537			
28-02	Well #1d	2-Feb-95																										78	14			
28-02	Well #1d	12-Jan-96																										85	5.3			
28-02	Well #1d	20-Aug-01																										67				
28-02	Well #1d	12-Sep-02																										126				
28-02	Well #1d	26-Mar-03																										94				
28-02	Well #1d	2-Sep-04																										85				
28-02	Well #1d	19-Feb-07																										97				
28-02	Well #1d	20-Aug-07																										94				
28-02	Well #1d	25-Feb-08																										85				
28-02	Well #1d	15-Aug-11	0.41J	2.7J		0.50J		0.41J	9.2J		0.08J			71	0.33J			1.4J	284									97	11.2J			
28-02	Well #1d	14-Feb-12	0.33J	2.9J		0.91J		0.39J	14		1.9J			57	0.72J	0.08J		0.42J	281									94	8.9J			
28-02	Well #1d	16-Aug-12		3.2J		1		0.36J	13		0.62J			56	0.92J				297									85	15.1J			
28-02	Well #1d	5-Feb-13	0.08J	0.20J	2.7J		0.76J		0.33J	9.2J		0.36J			6.6J	1.0J		0.12J	0.30J	258									95	20.2J		
28-02	Well #1d	20-Aug-13	0.07J	0.25J	3J		1		0.21J	23		2.4J			31.1J	1.1J	0.21J		0.38J	423									97	13.7J		
28-02	Well #1d	26-Feb-14	0.08J		3.2J		0.85J		0.04J	27		2.7J			24.1J	0.43J	0.30J		0.39J	460									94	13.0J		
28-02	Well #1d	19-Aug-14		0.38J	3.7J		1		0.20J	29		3.1J			22.6J	0.62J	0.09J			410									97			
28-02	Well #1d	19-Feb-15	0.84J	3.0J		0.68J		0.23J	42		3.2J			15.2J	1.3J	0.36J		0.84J	397									105	10.7J			
28-02	Well #1d	5-Aug-15	0.18J	3.1J	0.03J	1	0.33J	0.19J	66		2.2J			16.1J	0.63J	0.13J		0.37J	797									108	15.1J			
28-02	Well #1d	18-Feb-16	0.25J		3.5J		0.68J		0.17J	78		4.6J			11.9J	0.61J	0.27J		0.50J	549									102	7.0J		

Table 4a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds								General Chemistry						
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #2s	15-Feb-90			305						47,300		10,400							15								65	150			
28-02	Well #2s	2-Feb-95		15				22			80,900		623															59	35			
28-02	Well #2s	12-Jan-96		18		574			21																			43				
28-02	Well #2s	20-Aug-01										10																27	6.5			
28-02	Well #2s	12-Sep-02		14																								19	351.7			
28-02	Well #2s	26-Mar-03																										25	178.0			
28-02	Well #2s	2-Sep-04																										22				
28-02	Well #2s	19-Feb-07																														
28-02	Well #2s	20-Aug-07			126																											
28-02	Well #2s	25-Feb-08			153																								323.4			
28-02	Well #2s	15-Aug-11	9J	114		0.16J	0.90J	2.3J	8.8J			1.4J			22.1J	0.81J		0.03J	4.1J	38		1.20	17.40					114	14.0J			
28-02	Well #2s	14-Feb-12	7J	136		0.17J	1.1J	1.8J	5.7J			1J			6.3J	0.91J	0.43J		2.7J	25		1.90	23.60					52				
28-02	Well #2s	16-Aug-12	8J	134		0.19J	1.1J	2.3J	10			1.5J			10.4J	1.4J	0.25J	0.11J	2.2J	47		1.90	28.70					40				
28-02	Well #2s	5-Feb-13	1.1J	6.7J		0.06J	0.84J	0.29J	2.6J			0.20J			7.4J	3.8J			0.21J	66		1.30	18.70					427	50.7J			
28-02	Well #2s	20-Aug-13	0.05J	10	134	0.04J	0.22J	0.85J	2.5J	5.9J		1.2J			13J	2.4J	0.47J		2.8J	35		1.10	0.80J	21.50					81	11J		
28-02	Well #2s	26-Feb-14	0.34J	6.6J	131	0.14J	1.5J	2.0J	6.1J			1.1J			6.6J	1.4J	0.71J		2.5J	25								113	31.1J			
28-02	Well #2s	19-Aug-14	5.5J	138	0.07J	1	0.77J	2.0J	5.1J			1.8J			8.2J	1.4J	0.69J		2.0J	22		0.70J	24.80					72	6.9J			
28-02	Well #2s	19-Feb-15	0.16J	4.9J	115	0.30J	0.91J	1.9J	5.1J			0.64J			6.9J	1.5J	0.70J		2.1J	16		0.50J	13.60					89	13.6J			
28-02	Well #2s	5-Aug-15	0.21J	11	113	0.06J	0.31J	1.5J	2.3J	3.8J		1.2J			10.2J	3.6J	1.6J	0.08J	3.0J	23		0.40J	9.10					127	11.0J			
28-02	Well #2s	18-Feb-16	0.31J	12	126	0.06J	0.36J	1.2J	2.4J	7.2J		1.5J			10.7J	1.4J	2.5J		3.1J	38		0.50J	14.40					69	6.2J			
28-02	Well #2d	2-Feb-95									4,886		881															461	50			
28-02	Well #2d	12-Jan-96																										446	39.9			
28-02	Well #2d	20-Aug-01						18																				410	37.9			
28-02	Well #2d	12-Sep-02																										520	37.3			
28-02	Well #2d	26-Mar-03																										410	37.2			
28-02	Well #2d	2-Sep-04																										385	37.2			
28-02	Well #2d	19-Feb-07																														
28-02	Well #2d	20-Aug-07																														
28-02	Well #2d	25-Feb-08																														
28-02	Well #2d	15-Aug-11	0.85J	10.5J		0.07J	10	3.0J	15			3.8J			82	2.2J	0.27J		1.7J	485								430	35.4J			
28-02	Well #2d	14-Feb-12	0.56J	8.4J		0.27J	24	1.3J	14			3.4J			62	2.6J	0.49J			357								405	45.4J			
28-02	Well #2d	16-Aug-12	0.32J	0.44J	7.9J	0.11J	20	1.2J	12			3.8J			25.5J	2.7J	0.35J			279								414	36.6J			
28-02	Well #2d	5-Feb-13	0.06J	3.2J	116	0.10J	0.27J	1.6J	1.3J			0.24J			6.3J	1.2J			1.2J	11							104	11.3J				
28-02	Well #2d	20-Aug-13	0.07J	0.86J	7.1J	0.10J	8.5J	0.67J	16			5.4J			13.8J	4.6J	0.38J		0.20J	225							388	40.5J				
28-02	Well #2d	26-Feb-14	0.82J		8.7J	2	27	0.65J	24			6.2J			15.7J	1.7J	0.66J		0.28J	275							388	40.3J				
28-02	Well #2d	19-Aug-14		0.92J	9.6J	0.88J	6.8J	0.65J	22			4.0J			10.7J	3.4J	0.19J			217							422	45.5J				
28-02	Well #2d	19-Feb-15	1.4J	7.7J		0.37J	8.4J	0.60J	34			4.3J			10.9J	4.9J	0.82J		0.67J	211							358	42.1J				
28-02	Well #2d	5-Aug-15	0.04J	1.2J	9.8J	0.03J	0.33J	27	0.68J	42			6.3J			13.5J	4.8J	2.4J	0.12J	0.24J	271							360	33.4J			
28-02	Well #2d	18-Feb-16	0.10J	1.3J	8.0J	0.35J	11	0.56J	57			7.3J			12.4J	4.3J	1.1J		0.48J	342							348	32.4J				

Table 4a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds								General Chemistry						
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #3s	15-Feb-90			42						2,470		354															30	50			
28-02	Well #3s	2-Feb-95		17					16				20,150															91	380			
28-02	Well #3s	11-Jan-96											391															248	250			
28-02	Well #3s	20-Aug-01																											340	84.7		
28-02	Well #3s	12-Sep-02																											242	262.7		
28-02	Well #3s	26-Mar-03																											180	283.5		
28-02	Well #3s	2-Sep-04																												82	72.0	
28-02	Well #3s	19-Feb-07																														
28-02	Well #3s	20-Aug-07																														
28-02	Well #3s	25-Feb-08																														
28-02	Well #3s	15-Aug-11	5.2J	370					0.61J	1.2J	6.0J		0.67J		2.3J	12	0.41J		2.3J	150									1,619	75.4J		
28-02	Well #3s	14-Feb-12	1J	158	0.06J	0.15J	0.46J	0.47J	1.7J			0.46J		3.0J	2.9J	0.57J		1.8J	13									300	8.1J			
28-02	Well #3s	16-Aug-12	0.06J	1.4J	128	0.07J	0.13J	0.57J	0.74J	2.6J		0.67J		4.0J	3.0J	0.68J		1.5J	43									291	15.3J			
28-02	Well #3s	5-Feb-13	0.15J	1.4J	115	0.09J	0.32J	0.45J	0.91J			0.10J		4.1J	3.2J	0.11J		1.2J	3.2J									202	8.7J			
28-02	Well #3s	20-Aug-13	2.6J	138	0.06J	0.50J	0.46J	3J			0.34J		5.2J	6.8J	0.34J	0.23J	1.2J	11									610	11.1J				
28-02	Well #3s	26-Feb-14	0.06J	0.56J	130	0.04J	0.07J	0.56J	0.43J	1.7J		0.31J		3.5J	3.1J	2.5J		2.2J	7.0J									193	11.3J			
28-02	Well #3s	19-Aug-14	1.0J	130	0.08J	0.07J	0.46J	0.69J	2.2J		0.52J		4.3J	4.1J	2.8J		1.6J	7.4J									208					
28-02	Well #3s	19-Feb-15	2.5J	149	0.06J	0.41J	0.84J	3.7J			0.73J		5.4J	6.6J	0.60J		3.0J	12									174	13.3J				
28-02	Well #3s	5-Aug-15	0.05J	1.8J	73.1J	0.06J	0.98J	0.48J	2.8J		0.53J		2.5J	4.0J	1.2J	0.04J	2.2J	10									244	11.1J				
28-02	Well #3s	18-Feb-16	0.07J	1.6J	184	0.12J	0.18J	0.89J	3.3J		0.70J		5.7J	4.1J	3.3J		3.5J	13									163	5.5J				
28-02	Well #3d	2-Feb-95									2,009		396															185	60			
28-02	Well #3d	11-Jan-96																										171	56			
28-02	Well #3d	20-Aug-01																										52	7.6			
28-02	Well #3d	12-Sep-02																										83	8.1			
28-02	Well #3d	26-Mar-03																										128	39.2			
28-02	Well #3d	2-Sep-04																											51.3			
28-02	Well #3d	19-Feb-07																														
28-02	Well #3d	20-Aug-07																														
28-02	Well #3d	25-Feb-08																														
28-02	Well #3d	15-Aug-11	0.82J	21.5J	0.09J	0.07J		0.13J	30		6.5J		0.50J	0.82J	0.07J		2.2J	183									99	35.1J				
28-02	Well #3d	14-Feb-12		8.7J		0.16J	0.15J	27		3.8J		1.8J	0.66J	0.05J		0.69J	81									117	75J					
28-02	Well #3d	16-Aug-12	0.17J	11.9J		0.05J	0.13J	35		5.0J		2.1J	0.90J			0.52J	74									121	64.7J					
28-02	Well #3d	5-Feb-13	0.07J	0.74J	4.7J	0.09J	0.13J	25		4.2J		3.0J	1.4J		0.30J	0.25J	121									124	51.8J					
28-02	Well #3d	20-Aug-13	0.63J	7.9J	0.10J	0.18J	40		9.8J		5.5J	1.7J	0.25J	0.08J	0.29J	152									137	73.2J						
28-02	Well #3d	26-Feb-14	0.12J	6.7J	0.06J	0.15J	64		9.1J		2.8J	0.50J	1.5J		0.65J	166									110	54.0J						
28-02	Well #3d	19-Aug-14	0.19J	10.1J	0.18J	0.15J	41		9.9J		3.0J	0.92J	0.20J		0.22J	44									127	62.8J						
28-02	Well #3d	19-Feb-15	0.92J	8.2J	0.06J	0.17J	71		12		3.6J	2.1J	0.52J		0.99J	140									129	23.1J						
28-02	Well #3d	5-Aug-15	0.03J	10.4J	0.17J	0.16J	30		12		2.7J	1.2J	0.28J		0.70J	56									120	39.3J						
28-02	Well #3d	18-Feb-16	0.09J	7.9J	0.10J	0.15J	62		14		3.5J	0.93J	0.48J		0.74J	182									105	38.5J						

Table 4a
Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds								General Chemistry						
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #4s	15-Feb-90			286						29,400		486	0.4						10								83	20			
28-02	Well #4s	2-Feb-95		13							5,855		422															124	140			
28-02	Well #4s	11-Jan-96																									760	32				
28-02	Well #4s	20-Aug-01																									160	6.4				
28-02	Well #4s	12-Sep-02																									50					
28-02	Well #4s	26-Mar-03							12																		144	5.1				
28-02	Well #4s	2-Sep-04																									128					
28-02	Well #4s	19-Feb-07																														
28-02	Well #4s	20-Aug-07																														
28-02	Well #4s	25-Feb-08																														
28-02	Well #4s	15-Aug-11	3.0J	86.5J	0.12J	0.09J	5.2J	3.7J	5.3J		3.0J		6.7J	1.1J	0.15J	0.03J	6.5J	87									120	12.1J				
28-02	Well #4s	14-Feb-12	2.8J	154	0.19J	0.43J	8.2J	5.3J	9.5J		4.7J		12.4J	0.96J	0.41J	11.3J	115										124	6.4J				
28-02	Well #4s	16-Aug-12	2.6J	79.3J	0.15J	0.10J	5.7J	3.4J	4.5J		2.7J		7.4J	1.0J	0.25J	6.0J	78									107						
28-02	Well #4s	5-Feb-13	0.03J	0.90J	124	0.21J	3.3J	0.78J	2.8J		0.56J		4.1J	1.9J	0.78J	3.3J	17									140	18.6J					
28-02	Well #4s	20-Aug-13	0.17J	2.7J	113	0.15J	0.14J	5.7J	3.8J	6.2J		2.5J		7.8J	2.3J	0.52J	0.05J	5.8J	65								177	19.6J				
28-02	Well #4s	26-Feb-14	0.06J	1.6J	150	0.09J	5.0J	2.1J	6.3J		1.5J		4.4J	1.8J	0.08J	5.3J	44									202	12.4J					
28-02	Well #4s	19-Aug-14	0.27J	3.5J	222	0.22J	0.98J	7.1J	6.1J	20		5.8J		12.7J	2.5J	2.2J	9.4J	236								228	11.2J					
28-02	Well #4s	19-Feb-15	3.5J	178	0.16J	5.5J	3.5J	4.0J		2.1J		6.7J	4.8J	0.24J	6.5J	46									219	10.4J						
28-02	Well #4s	5-Aug-15	0.05J	2.1J	146	0.06J	0.41J	4.0J	2.4J	3.3J		1.3J		5.1J	2.6J	0.13J	3.3J	39								189	10.7J					
28-02	Well #4s	18-Feb-16	0.07J	2.3J	151	0.15J	0.06J	3.9J	2.7J	3.2J	1.6J		5.5J	2.5J	0.13J	5.2J	33								167	5.5J						
28-02	Well #4d	2-Feb-95									1,543		253														50	5				
28-02	Well #4d	11-Jan-96																									92	8				
28-02	Well #4d	20-Aug-01																									110	8.7				
28-02	Well #4d	12-Sep-02																									122					
28-02	Well #4d	26-Mar-03																									154					
28-02	Well #4d	2-Sep-04																									86					
28-02	Well #4d	19-Feb-07																														
28-02	Well #4d	20-Aug-07																														
28-02	Well #4d	25-Feb-08																														
28-02	Well #4d	15-Aug-11	0.38J	3.7J		0.4J	0.3J	0.11J	6.3J		2.0J		0.49J	0.28J		1.7J	16									73	20.8J					
28-02	Well #4d	14-Feb-12	0.17J	6.3J		0.22J	9.2J		1.8J		2.6J	0.31J		1.1J	42											71	13.7J					
28-02	Well #4d	16-Aug-12	4.8J	0.08J	0.16J	12		2.5J		2.2J	0.59J	0.25J	0.59J	12												71	14.7J					
28-02	Well #4d	5-Feb-13	0.05J	0.46J	5.2J	0.28J	0.14J	7.3J	0.99J		42.2J	0.98J		0.54J	100										94	13.7J						
28-02	Well #4d	20-Aug-13	0.41J	5.3J	0.03J	0.15J	0.18J	16		17		6.3J	0.84J	0.06J	0.52J	13									80	17.6J						
28-02	Well #4d	26-Feb-14	0.04J	6.5J		0.22J	16		24		8.3J	0.48J	0.11J	1.2J	123										82							
28-02	Well #4d	19-Aug-14	0.40J	8.6J	0.04J	0.56J	0.22J	16		11		2.5J	0.78J		0.48J	10									95	17.0J						
28-02	Well #4d	19-Feb-15	0.84J	11.2J	0.16J	0.19J	13		17		3.7J	1.6J	0.05J	1.4J	111										90	10.2J						
28-02	Well #4d	5-Aug-15	0.03J	11.0J	0.03J	0.61J	0.36J	0.22J	11		4.4J		2.3J	0.74J	0.06J	0.59J	8.9J								115	11.2J						
28-02	Well #4d	18-Feb-16	0.06J	7.3J	0.33J	0.16J	0.16J	21		11		3.7J	0.79J	0.06J	1.0J	182									98	5.5J						

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Detected Groundwater Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds								General Chemistry						
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #5s	15-Feb-90			419						32,200		10,400							20								720	50			
28-02	Well #5s	2-Feb-95		14				12			49,600		2,267															351	290			
28-02	Well #5s	11-Jan-96		10				12																			378	250				
28-02	Well #5s	20-Aug-01																										140	46.9			
28-02	Well #5s	12-Sep-02																										128	47.6			
28-02	Well #5s	26-Mar-03																										114	35.6			
28-02	Well #5s	2-Sep-04																										95				
28-02	Well #5s	19-Feb-07																														
28-02	Well #5s	20-Aug-07																														
28-02	Well #5s	25-Feb-08																														
28-02	Well #5s	15-Aug-11	12		206	0.10J	0.15J	1.2J	1.7J		6.0J		1.4J		3.2J	1.9J	0.04J	0.10J	5.7J	20								73				
28-02	Well #5s	14-Feb-12	14		194	0.07J	0.21J	1.6J	1.7J		13		5.7J		6.7J	2.1J		5.4J	25								66					
28-02	Well #5s	16-Aug-12	14		212	0.10J	1.3J	1.7J			5.8J		2.2J		4.5J	2.4J		4.7J	14								66					
28-02	Well #5s	5-Feb-13	0.03J	11	214	0.14J	0.98J	1.6J	4.7J				1.4J		5.8J	2.7J		0.08J	3.8J	11								82				
28-02	Well #5s	20-Aug-13	0.08J	18	245	0.08J	0.22J	1.7J	2.1J		16		3.6J		8.6J	2.9J	0.03J	6.3J	24								65	10.7J				
28-02	Well #5s	26-Feb-14	0.28J	15	206	0.14J	0.20J	2.7J	2.3J		24		7.9J		7.0J	2.0J	0.03J	0.07J	6.8J	27								51				
28-02	Well #5s	19-Aug-14	20		240	0.10J	0.16J	1.9J	2.1J		16		3.9J		6.6J	3.0J		6.6J	25								96	11.0J				
28-02	Well #5s	19-Feb-15	0.52J	16	251	0.11J	0.08J	1.7J	2.2J		29		12		8.1J	4.4J	0.41J	6.8J	26								54	11.6J				
28-02	Well #5s	5-Aug-15	0.05J	20	298	0.08J	0.14J	2.0J	2.2J		6.1J		1.5J		6.0J	2.9J		4.9J	8.6J								31	11.5J				
28-02	Well #5s	18-Feb-16	0.10J	18	287	0.14J	0.29J	1.7J	2.3J		23		5.9J		8.3J	3.0J	0.09J	7.2J	32								43	5.4J				
28-02	Well #5d	2-Feb-95									1,895		238														65	8				
28-02	Well #5d	11-Jan-96																										75	11			
28-02	Well #5d	20-Aug-01																										70	7.3			
28-02	Well #5d	12-Sep-02																										62	5.9			
28-02	Well #5d	26-Mar-03																										56				
28-02	Well #5d	2-Sep-04																										56				
28-02	Well #5d	19-Feb-07																														
28-02	Well #5d	20-Aug-07																														
28-02	Well #5d	25-Feb-08																														
28-02	Well #5d	15-Aug-11	0.44J	3.5J		0.32J		0.15J	8.9J			2.8J			27.5J	0.26J	0.08J	0.04J	1.6J	1,715								56	17.6J			
28-02	Well #5d	14-Feb-12	0.3J	4.9J		0.57J		0.17J	32			2.8J			26J	0.40J	0.07J	0.62J	1,557									55	5.5J			
28-02	Well #5d	16-Aug-12		4.1J		0.49J		0.13J	30			2.1J			19.6J	0.40J		0.26J	1,363								50	13.0J				
28-02	Well #5d	5-Feb-13	0.06J	0.34J	3.6J		0.39J	0.10J	24			0.15J			18.1J	0.65J		0.40J	1,080								57	19.4J				
28-02	Well #5d	20-Aug-13	0.30J	3.5J		0.24J		0.14J	37			1.8J			11.8J	0.67J	0.11J	0.18J	0.47J	693								75				
28-02	Well #5d	26-Feb-14	0.02J	4.4J		0.18J			59			3.0J			5.8J	0.31J	1.0J	1.00J	1.00J	625								52				
28-02	Well #5d	19-Aug-14	0.27J	4.3J		0.31J		0.14J	32			2.3J			3.2J	0.22J	0.21J	0.22J	211									53	6.0J			
28-02	Well #5d	19-Feb-15	0.16J	0.66J	4.7J		0.05J	0.18J	40			3.9J			2.9J	0.63J	0.75J	1.1J	134								55	17.7J				
28-02	Well #5d	5-Aug-15	0.02J	4.8J		0.08J		0.13J	19			3.1J			1.9J	0.36J	0.10J	0.84J	22								57	11.7J				
28-02	Well #5d	18-Feb-16	0.80J	4.4J		0.17J		0.14J	22			6.6J			4.1J	0.62J	0.56J	1.1J	557								59	5.6J				

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Facility Permit Number	Monitoring Well Code	Sample Date	Metals															Volatile Organic Compounds							General Chemistry							
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Chloride	Sulfate		
North Carolina 2L or Groundwater Protection Standard			1*	10	700	4*	2	10	1*	1,000	300	15	50	1	100	20	20	0.2*	0.3*	1,000	6,000	1	700	50	3	6	5	600	250	250		
Solid Waste Section Limit			6	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	100	3	1	1	1	NE	250			
28-02	Well #6s	12-Jan-96						50	24			41			97				72	109								52				
28-02	Well #6s	14-Feb-12						0.39J	0.40J	1.3J	0.37J		0.06J		2.5J	0.8J			1.3J	2.8J		1.40		4.40					33	31.4J		
28-02	Well #6s	5-Feb-13	0.06J	11	191		0.15J	0.17J	0.20J	1.2J	0.45J		0.05J		4.2J	1.2J			1.3J	2.4J		1.50		5.50					42	8.2J		
28-02	Well #6s	20-Aug-13	5.9J	164			0.11J	0.11J	0.47J	1.3J	0.58J		0.16J		5.4J	0.63J	0.03J		1.1J	2.5J		1.10		3.60					32	20.4J		
28-02	Well #6s	26-Feb-14	0.11J	23	216	0.04J	0.11J	0.47J	1.3J	0.58J					3.2J	0.63J			1.4J	3.7J		1.70		5.50					38	14.1J		
28-02	Well #6s	19-Aug-14		26	248	0.04J	0.04J	0.26J	1.3J	0.29J					3.5J	0.84J			1.2J	1.3J		1.70		6.70					33	13.3J		
28-02	Well #6s	19-Feb-15		7J	178										4.4J	0.67J			1.4J	0.83J		1.20		4.90					26	11.6J		
28-02	Well #6s	5-Aug-15	0.26J	5.2J	208		0.11J	0.54J	1.2J	0.49J					4.0J	0.52J			0.27J	4.3J		1.20		3.50					32	13.4J		
28-02	Well #6s	18-Feb-16	0.12J	18	171	0.05J	0.06J		0.98J	0.46J					3.2J	0.68J			1.6J	3.3J		1.20		5.40					21	5.7J		
28-02	Well #6d	12-Jan-96																										490	62.5			
28-02	Well #6d	14-Feb-12																										368	60.2J			
28-02	Well #6d	5-Feb-13	0.02J	1.4J	6.6J			0.21J	0.15J						0.19J	0.5J			0.22J	0.17J		1.5J	2.3J		0.86J	10			360	49.4J		
28-02	Well #6d	20-Aug-13	1.3J	5J											0.18J	1J			0.03J	0.03J		2.7J	3.8J		0.56J	8.6J			336	31.7J		
28-02	Well #6d	26-Feb-14	0.50J	3.9J			0.11J								0.13J	0.85J			0.03J	0.21J		4.5J	3.7J		0.42J	37			298	27.3J		
28-02	Well #6d	19-Aug-14	0.83J	1.1J	6.2J										0.21J	0.81J				2.5J	3.0J		3.3J	3.9J		0.57J	14			318	38.0J	
28-02	Well #6d	19-Feb-15	1.3J	4.9J											0.18J	0.94J				2.8J	2.5J		9.4J	8.0J			0.80J		295	38.7J		
28-02	Well #6d	5-Aug-15	0.09J	0.66J	6.5J		0.03J								0.17J	0.62J			0.11J	0.18J		3.0J	2.2J		0.40J	7.4J			320	34.0J		
28-02	Well #6d	18-Feb-16	0.20J	6.6J			0.84J								0.18J	1.5J												265	26.2J			
28-02	Well #7s	12-Jan-96		12					22						0.72J	2.7J			10			84							35	294		
28-02	Well #7s	14-Feb-12													0.78J	0.99J	2.1J		0.25J	0.14J		4.3J	8.1J		1.9J	6.9J			1,190	110J		
28-02	Well #7s	16-Aug-12	0.08J	1.5J	62.4J										0.49J	0.95J	3.0J			3.3J	4.4J		2.0J	11			567	11.4J				
28-02	Well #7s	5-Feb-13	0.07J	2.6J	57.2J										0.24J	0.79J	1.6J			0.10J	0.04J		4.7J	6.6J		0.92J	4.9J		720	19.6J		
28-02	Well #7s	20-Aug-13	1.4J	37.1J											0.39J	0.96J	3.4J			0.04J			4J	2.9J		1.1J	5J		353	10.7J		
28-02	Well #7s	26-Feb-14	0.04J	2.3J	90.5J	0.03J		0.10J	0.40J	0.89J	1.8J				0.20J	1.1J	2.4J			0.22J			6.1J	5.7J		1.3J	2.5J		980	429		
28-02	Well #7s	19-Aug-14	0.24J	1.8J	52.3J	0.06J									0.40J	0.89J	1.8J				4.0J	5.3J		0.78J	3.0J			388				
28-02	Well #7s	19-Feb-15	3.0J	91.9J											0.20J	1.1J	2.4J				9.4J	8.0J		1.6J	3.1J			538	565			
28-02	Well #7s	5-Aug-15	0.10J	0.78J	120	0.04J									1.6J	1.1J	1.5J				6.3J	4.0J		2.8J	2.1J			346	105J			
28-02	Well #7s	18-Feb-16	0.95J	2.5J	103	0.09J									0.12J	0.96J	2.2J				9.1J	5.0J		2.1J	9.4J			390	794			
28-02	Well #7d	12-Jan-96		19	752	3			30	15									73					105					706	245		

Notes:

1. Metal and volatile organic compound units are in micrograms per liter (parts per billion)
2. General chemistry units are in milligrams per liter (parts per million).
3. *-Groundwater Protection Standard
4. NE = Not Established
5. J - Indicates the analytical result is an estimated concentration between the method detection limit and the Solid Waste Section Reporting Limit
6. Well #6s and #6d were inaccessible during the August 2012 sampling event



- Blank cell indicates the analyte was not detected



- Concentration exceeds the 15A NCAC 02L.0202 (North Carolina 2L) or Groundwater Protection Standard

Table 4b
Detected Surface Water Constituents - Metals, Volatile Organic Compounds, and General Chemistry
February 2016 Semi-Annual Sampling Event
Dare County Closed East Lake Landfill

Facility Permit Number	Surface Water Sample Code	Sample Date	Metals																		Volatile Organic Compounds								General Chemistry			
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Acetone	Benzene	Chlorobenzene	Chloromethane	1,4-Dichlorobenzene	Methylene Chloride	Toluene	Xylenes	Chloride	Sulfate		
North Carolina 2B Freshwater Aquatic Life or Human Health Standard			640*	10	200,000*	6.5	0.15	24	4*	2.7	NS	0.54	NS	0.012	16	5	0.06	0.47*	NS	36	2,000	51*	140	96*	100	590*	11	670	230	NS		
Solid Waste Section Limit			10	10	100	1	1	10	10	10	300	10	50	0.2	50	10	10	5.5	25	10	100	1	3	1	1	1	5	NE	250			
28-02	Downstream	15-Feb-90			241				39		460		354							41									290	76		
28-02	Downstream	2-Feb-95									1,327		92																2,059	350		
28-02	Downstream	12-Jan-96																											451	204		
28-02	Downstream	20-Aug-01																												1,400	193.6	
28-02	Downstream	12-Sep-02																												1,320	37.6	
28-02	Downstream	26-Mar-03																												425	61.7	
28-02	Downstream	2-Sep-04																													186	14
28-02	Downstream	19-Feb-07																														
28-02	Downstream	20-Aug-07																														
28-02	Downstream	25-Feb-08																														
28-02	Downstream	15-Aug-11			5.6J	37.7J					0.26J	8.1J		0.05J			0.04J	11	18										2,749	345		
28-02	Downstream	14-Feb-12			2.6J	34.1J					0.26J	0.22J	3.9J	0.1J			1.6J			0.86J	4.4J								1,450	149J		
28-02	Downstream	16-Aug-12	0.10J	4.0J	33.6J	0.18J					5.2J	1.9J	6.2J	6.0J			4.2J	5.0J		0.24J	6.1J	52								523	29.7J	
28-02	Downstream	5-Feb-13	0.03J	3.9J	22.8J					0.49J	0.23J	3.2J	0.26J			2.2J	12			0.64J	4.8J								1,160	131J		
28-02	Downstream	20-Aug-13	0.12J	2.7J	22.9J	0.03J				1J	0.83J	2.4J	0.50J			1.8J	6.0J			0.81J	5.1J								575			
28-02	Downstream	26-Feb-14			1.6J	18.6J				1.6J	0.48J	2.8J	0.70J			1.7J	4.1J			1.2J	6.9J								545	24.1J		
28-02	Downstream	19-Aug-14			4.5J	16.1J	0.07J	6			0.81J	2.8J	1.8J	1.1J			2.8J	0.69J			1.7J	16							38	10.2J		
28-02	Downstream	19-Feb-15			1.9J	13.5J					0.84J	0.27J	1.5J	0.15J			1.4J	3.8J			0.95J	4.0J							262	12.8J		
28-02	Downstream	5-Aug-15	0.08J	2.9J	17.1J	0.03J				0.70J	0.71J	2.1J	0.52J			0.87J	5.6J	0.02J		1.4J	6.0J	10.50J								610	17.9J	
28-02	Downstream	18-Feb-16	0.06J	0.89J	9.4J					0.41J	0.17J	1.4J	0.23J			1.0J	1.6J			0.46J	2.8J							0.50J	0.80J	201	6.4J	

Notes:

1. Metal and volatile organic compound units are in micrograms per liter (parts per billion).

2. General chemistry units are in milligrams per liter (parts per million).

3. Standards obtained from 15A NCAC 02B (North Carolina 2B) Surface Water Standards for Class C Waters or are National Criteria per the U.S. Environmental Protection Agency (March 2016)

4. * - Human Health Standard

5. NS = No Standard NE = Not Established

6. J - Indicates the analytical result is an estimated concentration between the method detection limit and the Solid Waste Section Reporting Limit

 - Concentration exceeds the North Carolina 2B Freshwater Aquatic Life or Human Health Standard for Class C Waters

 - Blank cell indicates the analyte was not detected



Appendix A

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO , NC 27954

DATE COLLECTED: 02/18/16
DATE REPORTED : 04/01/16

REVIEWED BY: 

PARAMETERS	MDL	Downstream SWSL	Well #1	Well #1	Well #2	Well #2	Analysis	Method	
			Shallow	Deep	Shallow	Deep	Date	Analyst	Code
PH (field measurement), Units			6.9	6.9	7.8	6.9	7.3	02/18/16 BF	4500HB-00
Total Suspended Residue, mg/l		2.5		28		116		02/19/16 KKF	2540D-97
Chloride, mg/l	5.0	5.0	201	69	102	69	348	02/22/16 KKF	4500CLB-97
Sulfate, mg/l	5.0	250.0	6.4 J	537	7.0 J	6.2 J	32.4 J	02/23/16 SEJ	4500SO42E9
Antimony, ug/l	0.05	6.0	0.06 J	0.46 J	0.25 J	0.31 J	0.10 J	03/01/16 LFJ	EPA200.8
Arsenic, ug/l	0.66	10.0	0.89 J	6.6 J	---	U	12	1.3 J	03/01/16 LFJ
Barium, ug/l	0.02	100.0	9.4 J	85.9 J	3.5 J	126	8.0 J	03/01/16 LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	---	U				03/01/16 LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0		0.07 J	---	U	0.06 J	---	03/03/16 LFJ
Cadmium, ug/l	0.05	1.0	---	U	0.11 J	0.68 J	0.36 J	0.35 J	03/01/16 LFJ
Cobalt, ug/l	0.04	10.0	0.17 J	0.73 J	0.17 J	2.4 J	0.56 J	03/01/16 LFJ	EPA200.8
Total Chromium, ug/l	0.06	10.0	0.41 J	---	U	1.2 J	11	03/01/16 LFJ	EPA200.8
Copper, ug/l	0.07	10.0	1.4 J	4.0 J	78	7.2 J	57	03/01/16 LFJ	EPA200.8
Lead, ug/l	0.03	10.0	0.23 J	0.56 J	4.6 J	1.5 J	7.3 J	03/01/16 LFJ	EPA200.8
Nickel, ug/l	0.06	50.0	1.0 J	9.9 J	11.9 J	10.7 J	12.4 J	03/01/16 LFJ	EPA200.8
Selenium, ug/l	0.54	10.0	1.6 J	1.5 J	0.61 J	1.4 J	4.3 J	03/01/16 LFJ	EPA200.8
Silver, ug/l	0.06	10.0	---	U	0.44 J	0.27 J	2.5 J	1.1 J	03/01/16 LFJ
Thallium, ug/l	0.05	5.5	---	U	---	U	---	U	03/01/16 LFJ
Vanadium, ug/l	0.36	25.0	0.46 J	2.4 J	0.50 J	3.1 J	0.48 J	03/01/16 LFJ	EPA200.8
Zinc, ug/l	1.61	10.0	2.8 J	6.7 J		38		03/01/16 LFJ	EPA200.8
Zinc, ug/l	1.61	10.0			549		342	03/03/16 LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	932	1734	923	1404	1645	02/18/16 BF	2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	6.68	0.96	6.12	1.14	4.84	02/18/16 BF	4500OG-01
Temperature, °C			8	13	13	13	13	02/18/16 BF	2550B-00
Static Water Level, feet				5.73	6.22	5.23	4.73	02/18/16 BF	
Well Depth, feet				18.14	55.55	14.66	48.02	02/18/16 BF	
ORP, mv				+11	-11	-19	+37	02/18/16 BF	2580B
Turbidity (Field), NTU	1.0	1.0	1.59	4.52	8.69	32.2	11.8	02/18/16 BF	2130B-01

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

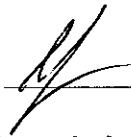
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO ,NC 27954

DATE COLLECTED: 02/18/16
DATE REPORTED : 04/01/16

REVIEWED BY: 

PARAMETERS	MDL	Well #3		Well #3		Well #4		Well #5		Analysis Date	Analyst	Method Code	
		SWSL	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow				
pH (field measurement), Units			6.6	7.6	7.0	7.3	6.6	02/18/16	BF	4500HB-00			
Total Suspended Residue, mg/l		2.5	96		92		137	02/19/16	KKF	2540D-97			
Chloride, mg/l	5.0	5.0	163	105	167	98	43	02/22/16	KKF	4500CLB-97			
Sulfate, mg/l	5.0	250.0	5.5 J	38.5 J	5.5 J	5.5 J	5.4 J	02/23/16	SRJ	4500SO42E9			
Antimony, ug/l	0.05	6.0	0.07 J	0.09 J	0.07 J	0.06 J	0.10 J	03/01/16	LFJ	EPA200.8			
Arsenic, ug/l	0.66	10.0	1.6 J	---	2.3 J	---	18	03/01/16	LFJ	EPA200.8			
Barium, ug/l	0.02	100.0	184	7.9 J	151	7.3 J	287	03/01/16	LFJ	EPA200.8			
Beryllium, ug/l	0.04	1.0	0.12 J	---	0.15 J	---	0.14 J	03/03/16	LFJ	EPA200.8			
Cadmium, ug/l	0.05	1.0	0.18 J	0.10 J	0.06 J	0.33 J	0.29 J	03/01/16	LFJ	EPA200.8			
Cobalt, ug/l	0.04	10.0	0.89 J	0.15 J	2.7 J	0.16 J	2.3 J	03/01/16	LFJ	EPA200.8			
Total Chromium, ug/l	0.06	10.0	---	U	3.9 J	---	1.7 J	03/01/16	LFJ	EPA200.8			
Copper, ug/l	0.07	10.0	3.3 J	62	3.2 J	21	23	03/01/16	LFJ	EPA200.8			
Lead, ug/l	0.03	10.0	0.70 J	14	1.6 J	11	5.9 J	03/01/16	LFJ	EPA200.8			
Nickel, ug/l	0.06	50.0	5.7 J	3.5 J	5.5 J	3.7 J	8.3 J	03/01/16	LFJ	EPA200.8			
Selenium, ug/l	0.54	10.0	4.1 J	0.93 J	2.5 J	0.79 J	3.0 J	03/01/16	LFJ	EPA200.8			
Silver, ug/l	0.06	10.0	3.3 J	0.48 J	0.13 J	0.06 J	0.09 J	03/01/16	LFJ	EPA200.8			
Thallium, ug/l	0.05	5.5	---	U	---	U	---	U	03/01/16	LFJ	EPA200.8		
Vanadium, ug/l	0.36	25.0	3.5 J	0.74 J	5.2 J	1.0 J	7.2 J	03/01/16	LFJ	EPA200.8			
Zinc, ug/l	1.61	10.0	13		33		32	03/01/16	LFJ	EPA200.8			
Zinc, ug/l	1.61	10.0		182		182		03/03/16	LFJ	EPA200.8			
Conductivity (at 25c), uMhos/cm	1.0	1.0	1683	1038	1394	963	1647	02/18/16	BF	2510B-97			
Dissolved Oxygen, mg/l	0.1	0.1	2.24	5.34	0.60	0.82	2.78	02/18/16	BF	4500OG-01			
Temperature, °C			14	10	14	14	10	02/18/16	BF	2550B-00			
Static Water Level, feet			4.15	3.28	4.87	3.36	8.88	02/18/16	BF				
Well Depth, feet			14.88	49.16	16.98	52.34	19.63	02/18/16	BF				
ORP, mv			+13	-49	-12	-19	+60	02/18/16	BF	2580B			
Turbidity (Field), NTU	1.0	1.0	94.7	24.5	95.9	13.1	89.1	02/18/16	BF	2130B-01			

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

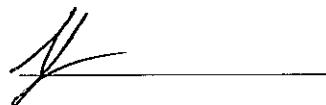
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PHONE (252) 756-6208
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ID#: 6016

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO , NC 27954

DATE COLLECTED: 02/18/16
DATE REPORTED : 04/01/16

REVIEWED BY: 

PARAMETERS	MDL	Well #5 SWSL Deep	Duplicate	Analysis		Method Code
				Date	Analyst	
PH (field measurement), Units			7.4	02/18/16	BF	4500HB-00
Chloride, mg/l	5.0	5.0	59	02/22/16	RKF	4500CLB-97
Sulfate, mg/l	5.0	250.0	5.6 J	02/23/16	SEJ	4500SO42E97
Antimony, ug/l	0.05	6.0	0.80 J	03/01/16	LFJ	EPA200.8
Antimony, ug/l	0.05	6.0		0.14 J	03/15/16	LFJ EPA200.8
Arsenic, ug/l	0.66	10.0	---	U	03/01/16	LFJ EPA200.8
Arsenic, ug/l	0.66	10.0		0.94 J	03/15/16	LFJ EPA200.8
Barium, ug/l	0.02	100.0	4.4 J		03/01/16	LFJ EPA200.8
Barium, ug/l	0.02	100.0		7.0 J	03/15/16	LFJ EPA200.8
Beryllium, ug/l	0.04	1.0	---	U	03/03/16	LFJ EPA200.8
Beryllium, ug/l	0.04	1.0		---	U	03/15/16 LFJ EPA200.8
Cadmium, ug/l	0.05	1.0	0.17 J		03/01/16	LFJ EPA200.8
Cadmium, ug/l	0.05	1.0		0.85 J	03/15/16	LFJ EPA200.8
Cobalt, ug/l	0.04	10.0	0.14 J		03/01/16	LFJ EPA200.8
Cobalt, ug/l	0.04	10.0		0.17 J	03/15/16	LFJ EPA200.8
Total Chromium, ug/l	0.06	10.0	---	U	03/01/16	LFJ EPA200.8
Total Chromium, ug/l	0.06	10.0		---	U	03/15/16 LFJ EPA200.8
Copper, ug/l	0.07	10.0	22		03/03/16	LFJ EPA200.8
Copper, ug/l	0.07	10.0		1.3 J	03/15/16	LFJ EPA200.8
Lead, ug/l	0.03	10.0	6.6 J		03/01/16	LFJ EPA200.8
Lead, ug/l	0.03	10.0		0.08 J	03/15/16	LFJ EPA200.8
Nickel, ug/l	0.06	50.0	4.1 J		03/03/16	LFJ EPA200.8
Nickel, ug/l	0.06	50.0		3.0 J	03/15/16	LFJ EPA200.8
Selenium, ug/l	0.54	10.0	0.62 J		03/03/16	LFJ EPA200.8
Selenium, ug/l	0.54	10.0		2.5 J	03/15/16	LFJ EPA200.8
Silver, ug/l	0.06	10.0	0.56 J		03/01/16	LFJ EPA200.8
Silver, ug/l	0.06	10.0		---	U	03/15/16 LFJ EPA200.8
Thallium, ug/l	0.05	5.5	---	U	03/01/16	LFJ EPA200.8
Thallium, ug/l	0.05	5.5		---	U	03/15/16 LFJ EPA200.8
Vanadium, ug/l	0.36	25.0	1.1 J		03/01/16	LFJ EPA200.8
Vanadium, ug/l	0.36	25.0		0.66 J	03/15/16	LFJ EPA200.8
Zinc, ug/l	1.61	10.0	557		03/03/16	LFJ EPA200.8
Zinc, ug/l	1.61	10.0		8.0 J	03/15/16	LFJ EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	856		02/18/16	BF 2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	1.62		02/18/16	BF 4500OG-01
Temperature, °C			14		02/18/16	BF 2550B-00
Static Water Level, feet			9.35		02/18/16	BF
Well Depth, feet			59.66		02/18/16	BF
ORP, mv			+99		02/18/16	BF 2580B
Turbidity (Field), NTU	1.0	1.0	5.75		02/18/16	BF 2130B-01

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

Drinking Water ID: 37715
Wastewater ID: 10

PHONE (252) 756-6208
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CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

CLIENT ID: 6016
ANALYST: MAO
DATE COLLECTED: 02/18/16 Page: 1
DATE REPORTED: 04/01/16

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B R1 (96)

PARAMETERS, ug/l	Date Analyzed:		03/02/16 Downstream	03/02/16 Well #1 Shallow	03/02/16 Well #1 Deep	03/02/16 Well #2 Shallow	03/02/16 Well #2 Deep
	MDL	SWSL					
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	0.50 J	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	14.40	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	2.90	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

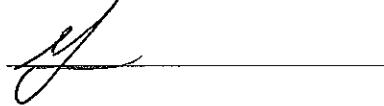
Drinking Water ID: 37715
Wastewater ID: 10

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

CLIENT ID: 6016

ANALYST: MAO
DATE COLLECTED: 02/18/16 Page: 2
DATE REPORTED: 04/01/16

REVIEWED BY: 

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	Date Analyzed:		03/02/16	03/02/16	03/02/16	03/03/16	03/03/16
	MDL	SWSL	Well #3 Shallow	Well #3 Deep	Well #4 Shallow	Well #4 Deep	Well #5 Shallow
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

Drinking Water ID: 37715
Wastewater ID: 10

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

CLIENT ID: 6016

ANALYST: MAO
DATE COLLECTED: 02/18/16 Page: 3
DATE REPORTED: 04/01/16

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	Date Analyzed:		03/03/16 Well #5 Deep	03/03/16 Duplicate
	MDL	SWL		
1. Chloromethane	0.77	1.0	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6016 A

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO , NC 27954

DATE COLLECTED: 02/18/16
DATE REPORTED : 04/01/16

REVIEWED BY: 

PARAMETERS	MDL	Well #6 SWSLShallow	Well #6 Deep	Well #7 Shallow	Equipment Blank	Trip Blank	Analysis Date	Analyst	Method Code
PH (field measurement), Units		6.9	7.3	6.7			02/18/16	BF	4500HB-00
Total Suspended Residue, mg/l		2.5	57	13			02/19/16	KKF	2540D-97
Chloride, mg/l	5.0	5.0	21	265	390		02/22/16	KKF	4500CLB-97
Sulfate, mg/l	5.0	250.0	5.7 J	26.2 J	794		02/23/16	SEJ	4500SO4289
Antimony, ug/l	0.05	6.0	0.12 J	0.20 J	0.95 J	0.18 J	03/15/16	LFJ	EPA200.8
Arsenic, ug/l	0.66	10.0	18	---	2.5 J	---	03/15/16	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	171	6.6 J	103	---	03/15/16	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.05 J	---	0.09 J	---	03/15/16	LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	0.06 J	0.84 J	---	U	03/15/16	LFJ	EPA200.8
Cobalt, ug/l	0.04	10.0	0.98 J	0.18 J	0.96 J	---	03/15/16	LFJ	EPA200.8
Total Chromium, ug/l	0.06	10.0	---	U	0.12 J	---	03/15/16	LFJ	EPA200.8
Copper, ug/l	0.07	10.0	0.46 J	1.5 J	2.2 J	---	03/15/16	LFJ	EPA200.8
Lead, ug/l	0.03	10.0	---	U	0.11 J	0.22 J	03/15/16	LFJ	EPA200.8
Nickel, ug/l	0.06	50.0	3.2 J	3.0 J	9.1 J	0.07 J	03/15/16	LFJ	EPA200.8
Selenium, ug/l	0.54	10.0	0.68 J	2.2 J	5.0 J	---	03/15/16	LFJ	EPA200.8
Silver, ug/l	0.06	10.0	---	U	---	U	03/15/16	LFJ	EPA200.8
Thallium, ug/l	0.05	5.5	---	U	---	U	03/15/16	LFJ	EPA200.8
Vanadium, ug/l	0.36	25.0	1.6 J	0.40 J	2.1 J	0.49 J	03/15/16	LFJ	EPA200.8
Zinc, ug/l	1.61	10.0	3.3 J	7.4 J	9.4 J	---	03/15/16	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	1135	1320	3320		02/18/16	BF	2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	0.76	4.05	2.20		02/18/16	BF	45000G-01
Temperature, °C			15	14	14		02/18/16	BF	2550B-00
Static Water Level, feet			5.56	6.38	3.65		02/18/16	BF	
Well Depth, feet			19.74	51.04	20.59		02/18/16	BF	
ORP, mv			-34	+16	-5		02/18/16	BF	2580B
Turbidity (Field), NTU	1.0	1.0	3.94	7.31	6.13		02/18/16	BF	2130B-01

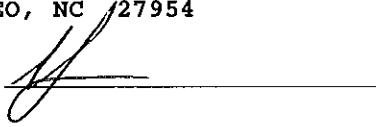
Environment 1, Incorporated

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

Drinking Water ID: 37715
Wastewater ID: 10

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO, NC 27954

REVIEWED BY: 

CLIENT ID: 6016 A
ANALYST: MAO
DATE COLLECTED: 02/18/16 Page: 1
DATE ANALYZED: 03/03/16
DATE REPORTED: 04/01/16

CORRECTED REPORT

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	Well #6 Shallow	Well #6 Deep	Well #7 Shallow	Equipment Blank	Trip Blank
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	0.50 J	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	57.10	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	1.20	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	5.40	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropene	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	4.10	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Inc.
P.O. Box 70855-114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CLIENT: 6016 A

Week: 9

DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO NC 27954

CHAIN OF CUSTODY RECORD

Page 1 of 1

DISINFECTION										CHLORINE NEUTRALIZED AT COLLECTION			
<input type="checkbox"/> CHLORINE										<input type="checkbox"/> pH CHECK (LAB)			
<input checked="" type="checkbox"/> UV													
None										CONTAINER TYPE, P/G			
<input type="checkbox"/>													
<input type="checkbox"/>										CHEMICAL PRESERVATION			
<input type="checkbox"/>										A - NONE D - NaOH			
<input type="checkbox"/>										B - HNO ₃ E - HCl			
<input type="checkbox"/>										C - H ₂ SO ₄ F - ZINC ACETATE/NaOH			
<input type="checkbox"/>										G - NATHIOSULFATE			
SAMPLE LOCATION	COLLECTION		DATE		TIME		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION		TEMPERATURE, °C AT COLLECTION		# OF CONTAINERS	Field pH	
Well #6 Shallow	2-18-16 1347		15		7		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	TSR	
Well #6 Deep	2-18-16 1410		14		6		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Chloride	
Well #7 Shallow	2-18-16 1125		14		7		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Sulfate	
Equipment Blank	2-18-16 0722		14		7		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Metals	
Trip Blank	2-18-16		14		3		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Conductivity	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	DO	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Temperature	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Field Parameter	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	EPA 8260B	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	8260 Dup. 1	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	ORP	
							<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		1	Field Parameter	
PARAMETERS/TESTS												CLASSIFICATION:	
<input type="checkbox"/>												<input type="checkbox"/> WASTEWATER (NPDES)	
<input type="checkbox"/>												<input type="checkbox"/> DRINKING WATER	
<input type="checkbox"/>												<input checked="" type="checkbox"/> DWGWN	
<input type="checkbox"/>												<input checked="" type="checkbox"/> SOLID WASTE SECTION	
CHAIN OF CUSTODY (SEAL) MAINTAINED DURING SHIPMENT/DELIVERY												N	
												SAMPLES COLLECTED BY: (Please Print)	
												Bobby F. / Tam Beaskey	
												SAMPLES RECEIVED IN LAB AT 02:27°C	
RELINQUISHED BY (SIG.) (SAMPLER)	DATETIME		RECEIVED BY (SIG.)		DATETIME		COMMENTS:						
Bobby F.	2-18-16 1611		Bobby F.		1611								
RELINQUISHED BY (SIG.)	DATETIME		RECEIVED BY (SIG.)		DATETIME								
RELINQUISHED BY (SIG.)	DATETIME		RECEIVED BY (SIG.)		DATETIME								

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DARE CO. LANDFILL (EAST LAKE)
MR. EDWARD L. MANN
DARE CO. PUBLIC WORKS
P.O. BOX 1000
MANTEO NC 27954

CLIENT: 6016 Week: 9

DARE CO. LANDFILL (EAST LAKE)
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CHAIN OF CUSTODY RECORD

Page 1 of 2

COLORINE NEUTRALIZED AT COLLECTION

DISINFECTION		L2												L2L2L2		pH CHECK (LAB)				
<input type="checkbox"/> CHLORINE		<input type="checkbox"/> UV												<input type="checkbox"/> NONE		<input type="checkbox"/> CONTAINER TYPE, PIG				
																CHEMICAL PRESERVATION				
																A - NONE D - NaOH				
																B - HNO ₃ E - HCl				
																C-H ₂ SO ₄ F - ZINC ACETATE/NaOH				
																G - NATHIOSULFATE				
SAMPLE LOCATION	COLLECTION	DATE	TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	TSR	Chloride	Sulfate	Metals	Conductivity	DO	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2	ORP	Field Parameter
Downstream	2-18-16	0740	8	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CLASSIFICATION:										
Well #1 Shallow	2-18-16	1240	13	8	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WASTEWATER (NPDES)										
Well #1 Deep	2-18-16	1220	13	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DRINKING WATER										
Well #2 Shallow	2-18-16	1320	13	7	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #2 Deep	2-18-16	1305	14	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #3 Shallow	2-18-16	0940	10	7	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #3 Deep	2-18-16	0935	11	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #4 Shallow	2-18-16	1145	14	7	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #4 Deep	2-18-16	1200	14	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #5 Shallow	2-18-16	0945	10	7	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Well #5 Deep	2-18-16	0930	14	6	25	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
RELINQUISHED BY (SIG.) (SAMPLET)	<i>Bobby J. Ke</i>	2-18-16	DATETIME	RECEIVED BY (SIG.)	<i>Bobby J. Ke</i>	DATETIME	RECEIVED BY (SIG.)	<i>Bobby J. Ke</i>	DATETIME	RECEIVED BY (SIG.)	<i>Bobby J. Ke</i>	DATETIME	RECEIVED BY (SIG.)	<i>Bobby J. Ke</i>	DATETIME	RECEIVED BY (SIG.)	<i>Bobby J. Ke</i>	DATETIME	REUNQUISHED BY (SIG.)	
RELINQUISHED BY (SIG.)		DATETIME		RECEIVED BY (SIG.)		DATETIME	RECEIVED BY (SIG.)		DATETIME	RECEIVED BY (SIG.)		DATETIME	RECEIVED BY (SIG.)		DATETIME	RECEIVED BY (SIG.)		DATETIME	REUNQUISHED BY (SIG.)	

SAMPLES COLLECTED BY:
(Please Print)

Comments:
Rebuk for 1 from 3 sets (2 sets)

Environment I, Inc.
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CLIENT: 6016 Week: 9

DARE CO. LANDFILL
MR. EDWARD L. M.
DARE CO. PUBLIC
P.O. BOX 1000
MANTEO NC 27954

CHAIN OF CUSTODY RECORD

Page 2 of 2

CLIENT: 6016		Week: 9		environmentalinc.com Phone (252) 756-6208 • Fax (252) 756-0633	
DARE CO. LANDFILL (EAST LAKE) MR. EDWARD L. MANN DARE CO. PUBLIC WORKS P.O. BOX 1000 MANTEO NC 27954					
DISINFECTION		2		CHLORINE NEUTRALIZED AT COLLECTION	
CHLORINE		2		pH CHECK (LAB)	
<input type="checkbox"/> UV					
NONE				CONTAINER TYPE, PIG	
		P	P	P	CHEMICAL PRESERVATION
		P	P	P	A - NONE D - NaOH
		P	P	P	B - HNO ₃ E - HCl
		P	P	P	C - H ₂ SO ₄ F - ZINC ACETATE/NaOH
		P	P	P	G - NATHIOSULFATE
SAMPLE LOCATION		COLLECTION		PARAMETERS/TESTS	
DATE		TIME		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	
Duplicate		2-18-16 14:40		TEMPERATURE, °C AT COLLECTION	
		14		# OF CONTAINERS	
		3		Field pH	
				TSR	
				Chloride	
				Sulfate	
				Metals	
				Conductivity	
				DO	
				Temperature	
				Field Parameter	
				EPA 8260B	
				8260 Dup. 1	
				8260 Dup. 2	
				ORP	
				Field Parameter	
CLASSIFICATION:					
				<input type="checkbox"/> WASTEWATER (NPDES)	
				<input type="checkbox"/> DRINKING WATER	
				<input checked="" type="checkbox"/> DW/GW	
				<input checked="" type="checkbox"/> SOLID WASTE SECTION	
RELINQUISHED BY (SIG.) (SAMPLER)		DATETIME RECEIVED BY (SIG.)		COMMENTS: MW LD Dup	
Bobby Lop		2-18-16 14:40			
RELINQUISHED BY (SIG.)		DATETIME RECEIVED BY (SIG.)			
RELINQUISHED BY (SIG.)		DATETIME RECEIVED BY (SIG.)		DATETIME	
RELINQUISHED BY (SIG.) (SAMPLER)		DATETIME RECEIVED BY (SIG.)		COMMENTS: MW LD Dup	
Bobby Lop		2-18-16 14:40			
RELINQUISHED BY (SIG.)		DATETIME RECEIVED BY (SIG.)			
SAMPLES COLLECTED BY: (Please Print)				SAMPLES RECEIVED IN LAB AT 25°C	
				Samples received from Basslees	

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PLEASE READ instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

